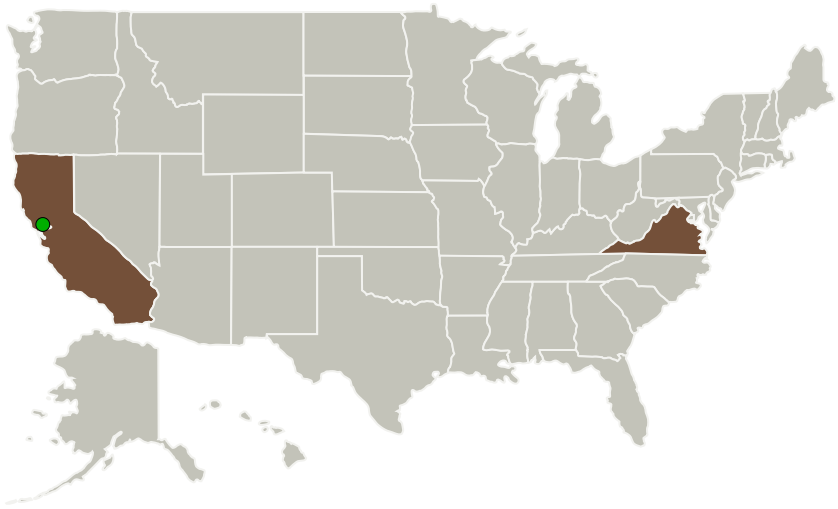
ATC Operations Analysis via Automatic Recognition of Clearances, Phase I

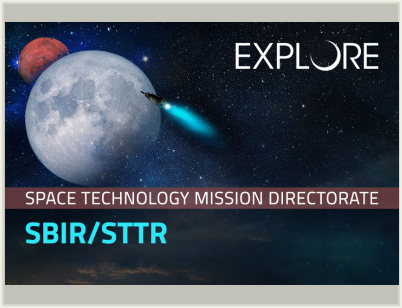
Completed Technology Project (2010 - 2010)

Project Introduction

Recent advances in airport surface surveillance have motivated the creation of new tools and data sources for analysis of Air Traffic Control (ATC) operations. The Surface Operations Data Analysis and Adaptation (SODAA) tool, which is being used by NASA to conduct airport ATC operations analysis, is a prime example of one such analysis tool. What is missing from ATC operations analysis, however, is accessible and reliable data regarding the clearances issued by the controller and other communication that is conducted with the pilot that influences the behavior that is seen in the surveillance data. The current command and control paradigm for managing air traffic in the National Airspace System (NAS) is highly dependent on voice communication. This approach has benefited the development of ATC over the last century in a number of ways, including a low level of required aircraft equipage and the ability to handle contingency situations and adapt to new requirements easily due to the flexibility and adaptability of the human air traffic controllers and pilots. However, the reliance on voice communication in ATC operations presents challenges to the researcher who is trying to obtain data and conduct detailed analyses of ATC operations. In this proposal, we draw on existing Mosaic ATM expertise and tools to perform automatic speech recognition of ATC clearances. The recognized ATC clearances will be associated with the flight that is the subject of the clearance, time-stamped and encoded into an analysis database. The SODAA tool will be used as the platform for storage and analysis of this verbal clearance data.

Primary U.S. Work Locations and Key Partners





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Organizations Performing Work	Role	Type	Location
Mosaic ATM, Inc.	Lead Organization	Industry	Leesburg, Virginia
Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California

Primary U.S. Work Locations	
California	Virginia

Project Transitions

January 2010: Project Start

July 2010: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/139955)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Mosaic ATM, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Chris Brinton

Co-Investigator:

Chris Brinton

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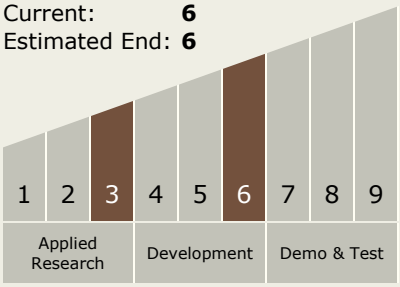
Technology Maturity (TRL)

Start: **3**
Current: **6**
Estimated End: **6**



Technology Areas

Primary:

- TX16 Air Traffic Management and Range Tracking Systems
  - TX16.3 Traffic Management Concepts

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System